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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BASINGER, SHERMAN D	

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/643,512	KAUFMANN ET AL.	
	Examiner	Art Unit	
	Sherman D. Basinger	3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-26,28-47,49-68 and 70-94* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-16,20-26,28-34,38-47,49-60,67,68,70-84 and 91-94* is/are rejected.

7)☒ Claim(s) *17-19,35-37,61-66 and 85-90* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/3/05&8/19/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 30, 2005 has been entered.

Claim Objections

2. Claims 24 and 38 are objected to because of the following informalities: in claim 24 line 4 "said compensated torque command signal" has no clear antecedent; in claim 38 a semi-colon should be inserted at the end of line 5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 93 and 94 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant has failed to describe in detail how the master control unit 16 is

integrated with an auto pilot to facilitate autonomous control. Further, applicant has failed to describe in detail how the water craft control unit is integrated with an auto pilot to facilitate autonomous control. The last line on page 4 of the specification and the first line on page 5 of the specification while mentioning that an auto pilot function for directional control and guidance may be readily integrated does not describe in detail how this can be done. Thus one having ordinary skill in the art is not enabled to do so.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 93 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 49 depends from a canceled claim and claim 93 is written in dependent form, but fails to state from which claim 93 depends.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 9, 10, 13, 14, 20, 21, 28, 31, 38 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Andonian et al.

Andonian et al discloses a steer-by-wire system which can be used on a boat-see column 2, line 11. The directional control system is 14. The rudder position sensor of the directional control system is 30.

The helm control system is 12. The helm command signal comes from steering device 32. The operator is 34. The tactile feedback to the operator is provided by 22 and 35. Tactile feedback includes one of a resistive force, a reaction torque to an operator, an on center detent as a helm moves thru a center position, and variable control stops to resist helm motion beyond a selected threshold. Note in column 2, lines 43 and 44 the discussion of a resistive force that acts as a steering feedback 22.

Steering sensor 18 includes the helm position sensor and a torque sensor to produce and transmit a helm position signal and a helm torque signal. (see column 2, lines 15-20).

The watercraft speed sensor would be part of vehicle sensor 40-see column 3, line 44.

The master control unit in operable communication with the speed sensor, the helm control system 12 and the direction control system 14 is controller subsystem 16.

The master control unit inherently includes a torque control process for generating a helm command signal 36 based on the helm torque signal, the helm position signal and the watercraft speed signal. See column 3, last 5 lines and column 4, lines 1-14.

With regard to claim 2, the rudder force sensor is part of turning sensor 30. The rudder force sensor would inherently produce and transmit a rudder force signal to which the rudder control system 24 would be responsive through its feed back to the master control unit 16.

The closed loop system of claim 9 includes 32, 18, 20 and 35 of figure 2.

With regard to claim 10, it is inherent that the helm control system 12 is configured to exhibit a bandwidth sufficient to facilitate the torque control process maintaining stability of the watercraft steer-by-wire system; otherwise, the watercraft would not be able to be steered in a safe manner.

With regard to claim 13, it is also inherent that the direction control system 14 is configured to exhibit a bandwidth sufficient to facilitate the position control process to maintain stability of the watercraft steer-by-wire system. Absent this the watercraft would not be able to be safely controlled leading to possible injury and property damage.

The closed loop control system of claim 14 includes 16, 36, 24, 30 and the feedback from turning sensor 30 to controller subsystem 16.

With regard to claim 20, in Andonian et al, the watercraft speed signal is received from 40, the helm position signal is received from 18, the helm torque sensor signal is received from 18, the rudder position signal is received from 30, the generated helm command signal to a helm control system based on the helm torque signal, the helm position signal and the watercraft speed signal is that shown by the line connecting controller 16 to steering actuator 20, the tactile feedback including a resistive force to an operator is 22 and the generated directional command signal to a direction control system 14 based on the watercraft speed signal, the rudder position signal and the helm position signal is 36.

With regard to claim 21, the rudder force signal is received from 30 and the helm command signal is based on this rudder force signal. Also, the generated direction control command signal 36 is based on the watercraft speed, the helm position signal and at least one of the rudder position signal and the rudder force signal. This is show by the direction of the lines connecting sensor 40, controller 16, turning actuator 24 and turning sensor 30 which senses both rudder angle and torque.

Again, it would be inherent that the generated torque command signal in the helm control system 12 would exhibit a bandwidth sufficient to facilitate a torque control process generating the helm command signal to facilitate maintaining stability of the steering. Absent this, the watercraft would not be able to be controlled leading to both injury and property damage.

Again, it would be inherent that the generated position command signal of the direction control system 14 would exhibit a bandwidth sufficient to facilitate a position control process generating the rudder command signal to facilitate maintaining stability of the steering. Absent this the watercraft would not be able to be controlled leading to both injury and property damage.

With regard to claim 38, it is inherent that the storage medium 16 of Andonian et al is encoded with a machine-readable computer program code for steering a watercraft, the storage medium including instructions for causing a computer to implement a method comprising receiving a watercraft speed signal from 40, receiving a helm position signal from 18, receiving a helm torque signal from 18, receiving a rudder position signal from 30, generating a helm command signal to a helm control system 12 based on the helm torque signal, the helm position signal and the watercraft speed signal to provide tactile feedback including resistive force 22 to an operator and generating a direction control command signal 36 to a direction control system 14 based on the watercraft speed signal from 40, the rudder position signal from 30, and the helm position signal from 18 to control direction of the watercraft.

With regard to claim 39, the computer data signal for steering a watercraft comes from controller subsystem 16 which computer data signal includes instructions for causing a computer within subsystem 16 to implement a method

comprising

receiving a watercraft speed signal from 40;

receiving a helm position signal from 18;

receiving a helm torque sensor signal from 18;

receiving a rudder position signal from 30;

generating a helm command signal to a helm control system 12 based on said helm torque signal , said helm position signal and said watercraft speed signal to provide

tactile feedback 22 including a resistive force to an operator; and generating a directional command signal 36 to a direction control system 14 based

on said watercraft speed signal, said rudder position signal, and said helm position signal to

control direction of said watercraft.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 6, 7, 25, 26, 40, 41, 43, 44, 49, 52, 53, 54, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andonian et al and Stout et al.

Andonian et al does not disclose that the position control process calculates and produces a variable steering ration signal in response to said helm position, said helm torque signal and the watercraft speed signal.

Note in Stout et al paragraphs [0054] and [0055]. In view of what is taught in these paragraphs of Stout et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify Andonian et al such that the position control process calculates and produces a variable steering ration signal in response to said helm position, said helm torque signal and the watercraft speed signal. Motivation to do so is to allow better control of the watercraft at higher speeds.

In view of the above modification of Andonian et al with Stout et al, it would be inherent that the position control process further comprise a direction command process that calculates a theta correction and generated a theta corrected directional command signal from a variable steering ratio signal, the helm torque signal (18 of Andonian et al) and helm position signal (18 of Andonian et al).

With regard to claim 26, with the above modification, it would be inherent that the generated directional command signal would be based on the helm position signal, the helm torque signal and the variable steering ratio signal.

With regard to claim 40, Andonian et al discloses a watercraft steer-by-wire control system (see column 2, lines 10-15)

comprising

a direction control system 14 responsive to a directional command signal 36 for steering a watercraft, said direction control system 14 including a rudder position sensor 30 to

measure and transmit a rudder position signal,

a helm control system 12 responsive to a helm command signal for receiving a directional input to a helm from an operator 34 and providing tactile feedback 22 to an operator,

said helm control system including a helm position sensor 18 to produce and transmit a helm

position signal,

a master control unit 16 in operable communication with said helm control

system, and said direction control system;

said master control unit 16 inherently includes a position control process for generating said

directional command signal 36 in response to said helm position signal, but does not disclose that the position control process calculates and produces a variable steering ratio. However, in view of paragraphs [0054] and [0055] of Stout et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify Andonian et al such that the position control process calculates and produces a variable steering ratio. Motivation to do so is to better control the watercraft at higher speeds.

Andonian et al also discloses that the watercraft steer-by-wire control system includes a watercraft speed sensor 40 for producing a watercraft speed signal and wherein said position control process is responsive to said watercraft speed signal.

With regard to claim 43, the rudder force sensor is 30.

With regard to claim 44, the helm torque sensor is part of 18. The master control unit would inherently include a torque control process for generating the helm command signal based on the helm torque signal and the helm position signal received from 18 and the watercraft speed signal received from 40.

With regard to claim 52, that the tactile feedback 22 includes a resistive force is discussed in column 3, lines 42 and 43.

The closed loop system of claim 53 includes 32, 18, 16 and 20.

It is inherent that the bandwidth defined in claims 54 and 57 is exhibited such that the watercraft is controlled and injury loss and personal property loss are not experienced. This is a given. It has to be done in order to control the watercraft.

The closed loop system of claim 58 includes 16, 36, 24, 30 and 16.

11. Claims 67, 68, 70, 71, 77, 78, 81, 91 and 92 are rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al and Millsap et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

With regard to claims 67 and 68, Andonian et al discloses a method for directing a watercraft with a watercraft
steer-by-wire system comprising
receiving a helm position signal from 18;
receiving a rudder position signal from 30;

generating a helm command signal to a helm control system based on said helm position signal to provide tactile feedback 22 to an operator;

generating a directional command signal 36 to a direction control system 14 based on said rudder position signal, and said helm position signal to control direction of said watercraft

receiving a watercraft speed signal from 40 wherein at least one of

said generating a helm command is further based on said watercraft speed signal and said

generating a directional command signal is further based on said watercraft speed signal.

Andonian et al does not disclose producing a mode selection signal wherein said generating a directional command signal is responsive to the mode selection signal. Note in Millsap et al column 2, lines 40-48. In view of this teaching by Millsap et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify Andonian et al in view of Millsap et al to produce a mode selection signal wherein said generating a directional command signal is responsive to the mode selection signal. Motivation to do so is found in Millsap et al column 2, lines 46-48.

Andonian et al also discloses for claims 70 and 71

the method for steering a watercraft of

further comprising

receiving a rudder force signal from 30, and wherein said a helm command signal is also based on said rudder force signal;

generating a directional command signal 36 to a direction control system 14 based on said watercraft speed signal from 40, said helm position signal from 18, and at least one of said rudder

position signal and said rudder force signal from 30 and

receiving a helm torque signal from 18 and wherein said generating a

helm command is further based on said helm torque signal.

The resistive force of claim 77 is discussed in column 2, lines 40-45 of Andonian et al.

With regard to claims 78 and 81, it is inherent that the bandwidth defined in theses claims is exhibited such that the watercraft is controlled and injury loss and personal property loss are not experienced.

With regard to claim 91, Andonian et al inherently discloses a storage medium in controller subsystem 16 that is encoded with a machine-readable

computer program code for steering a watercraft, said storage medium including instructions

for causing a computer to implement a method comprising

receiving a helm position signal from 18;

receiving a rudder position signal from 30;

generating a helm command signal to a helm control system based on said helm position signal to provide tactile feedback 22 to an operator; and

generating a directional command signal 36 to a direction control system 14 based on said rudder position signal from 30, and said helm position signal from 18 to control direction of said watercraft.

Andonian et al for claim 92 also discloses a computer data signal from control subsystem 16 for steering a watercraft, said

computer data signal including instructions for causing a computer within subsystem 16 to implement a method

comprising

receiving a helm position signal from 18;

receiving a rudder position signal from 30;

generating a helm command signal to a helm control system 12 based on said helm position signal to provide tactile feedback 22 to an operator, and

generating a directional command signal 36 to a direction control system 14 based on said rudder position signal, and said helm position signal to control direction of said watercraft.

With regard to claims 91 and 92, Andonian et al does not disclose producing a mode selection signal wherein said generating a directional command signal is responsive to the mode selection signal.

Note in Millsap et al column 2, lines 40-48. In view of this teaching by Millsap et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify Andonian et al in view of Millsap et al to produce a mode selection signal wherein said generating a directional command signal is responsive to the mode selection signal. Motivation to do so is found in Millsap et al column 2, lines 46-48.

12. Claims 3, 4, 5, 11, 12, 15, 16, 22, 23, 24, 29, 30, 32, 33 and 34 are rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al in view of Kaufmann et al and Demerly et al.

The applied references have common inventors with the instant application. Based upon the earlier effective U.S. filing date of the references, they constitute prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Andonian et al does not disclose: that said torque control process includes an active damping process wherein a damping

torque command signal is generated based on a time rate of change of said helm position

signal and modified by said helm torque signal and said watercraft speed signal, that said torque control process implements a compensator to configure spectral content of a damping torque command signal thereby generating a compensated torque command

signal, said compensator is configured to facilitate at least one of a modification of the spectral content of said tactile feedback and maintaining stability of said watercraft steer-by-

wire control system, that said torque control process further implements a feel process comprising an assist

sub-process responsive to a compensated torque command signal and said watercraft speed

signal, which generates an assist torque command and a return sub-process responsive to said

helm position signal and said watercraft speed signal, which generates a return torque command, that said helm control system comprises a helm control unit and a helm dynamics unit;

said helm control unit is responsive to said helm command signal and said helm torque sensor
signal and generates a torque command signal; said helm dynamics unit is responsive to said
torque command signal and provides said tactile feedback in response thereto to an operator, that
said helm control unit includes a compensator configured to characterize spectral content of said torque command signal to facilitate at least one of maintaining stability of said
helm control system and increasing bandwidth of said helm control system, that said direction control system comprises a rudder control unit and a rudder dynamics unit; said rudder control unit is responsive to said directional command signal and a rudder
position signal and generates a position command signal; said rudder dynamics unit is responsive to said position command signal and provides a rudder position in response thereto, and that said rudder control unit includes a compensator configured to characterize spectral
content of said position command signal to facilitate at least one of maintaining stability of
said direction control system and increasing bandwidth of said direction control system.

Note in Kaufman et al figures 2-6 and in Demerly et al figures 2-6, 11 and 12. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains in view of what is disclosed in Kaufman et al figures 2-6 and Demerly et al figures 2-6, 11 and 12 to modify Andonian et al to have said torque control process include an active damping process wherein a damping torque command signal is generated based on a time rate of change of said helm position

signal and modified by said helm torque signal and said watercraft speed signal, to have said torque control process implement a compensator to configure spectral content of a damping torque command signal thereby generating a compensated torque command signal, said compensator being configured to facilitate at least one of a modification of the spectral content of said tactile feedback and maintaining stability of said watercraft steer-by-wire control system, to have said torque control process further implement a feel process comprising an assist

sub-process responsive to a compensated torque command signal and said watercraft speed

signal, which generates an assist torque command and a return sub-process responsive to said

helm position signal and said watercraft speed signal, which generates a return torque command, to have said helm control system comprise a helm control unit and a helm dynamics unit;

said helm control unit being responsive to said helm command signal and said helm torque sensor signal and generate a torque command signal; said helm dynamics unit being responsive to said torque command signal and providing said tactile feedback in response thereto to an operator, to have said helm control unit include a compensator configured to characterize spectral content of said torque command signal to facilitate at least one of maintaining stability of said helm control system and increasing bandwidth of said helm control system, to have said direction control system comprise a rudder control unit and a rudder dynamics unit; said rudder control unit being responsive to said directional command signal and a rudder position signal and generating a position command signal; said rudder dynamics unit being responsive to said position command signal and providing a rudder position in response thereto, and to have said rudder control unit include a compensator configured to characterize spectral content of said position command signal to facilitate at least one of maintaining stability of said direction control system and increasing bandwidth of said direction control system.

Motivation to do so can be found in Demerly et al column 2, lines 34-38.

Andonian et al does not disclose that said direction control system comprises a rudder control unit and a rudder dynamics unit, said rudder control unit is responsive to said directional command signal and said rudder position signal and generates a position command signal, that said rudder dynamics unit is responsive to said position command signal and provides a rudder position in response thereto, that said rudder control unit includes a compensator configured to characterize spectral content of said position command signal to facilitate at least one of maintaining stability of said direction control system and increasing bandwidth of said direction control system, and that said rudder control unit includes a compensator configured to characterize spectral content of said position command signal such that said direction control system exhibits a bandwidth sufficient to facilitate generation of a rudder command signal by a position control process to maintain stability of said steer-by-wire system.

Note figures 2-6 of Kaufmann et al and figures 2-6, 11 and 12 of Demerly et al. In view of what is taught by Kaufmann et al and Demerly et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains to modify Andonian et al such that said direction control system comprises a rudder control unit and a
rudder dynamics unit, said rudder control unit is responsive to said directional command signal and said rudder position signal and generates a position command signal, such that said rudder
dynamics unit is responsive to said position command signal and provides a rudder position
in response thereto, such that said rudder control unit includes a compensator configured to characterize spectral
content of said position command signal to facilitate at least one of maintaining stability of
said direction control system and increasing bandwidth of said direction control system, and such that said rudder control unit includes a compensator configured to characterize spectral content of said position command signal such that said direction control
system exhibits a bandwidth sufficient to facilitate generation of a rudder command signal by
a position control process to maintain stability of said steer-by-wire system.
Motivation to do so can be found in Demerly et al column 2, lines 34-38.

13. Claim 42 is rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al and Stout et al as combined for claim 6 and further in view of Millsap et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Andonian et al does not disclose a water mode selector for producing a mode selection signal wherein said position control process is responsive to the mode selection signal. Note in Millsap et al column 2, lines 40-48. In view of this teaching by Millsap et al, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify Andonian et al in view of Millsap et al to have a water mode selector for producing a mode selection signal wherein said position control process is responsive to the mode selection signal. Motivation to do so is found in Millsap et al column 2, lines 46-48.

14. Claims 45-47, 55, 56, 50, 51, 59 and 60 are rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al and Stout et al as combined for claim 40 and further in view of Kaufmann et al and Demerly et al as combined with Andonian et al for claims 3-5, 11, 12, 15, 16, 22-24, 29, 30 and 32-34.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

15. Claims 72-74, 79, 80 and 82-84 are rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al and Millsap et al as combined for claim 67 and further in

view of Kaufmann et al and Demerly et al as combined with Andonian et al for claims 3-5, 11, 12, 15, 16, 22-24, 29, 30 and 32-34.

The applied references have a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the references, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2). ***.

16. Claims 75 and 76 are rejected under 35 U.S.C. 103(a) as being obvious over Andonian et al and Millsap et al as combined for claim 67 and further in view of Stout et al as combined with Andonian et al for claims 6, 7 and 40.

The applied reference Millsap et al has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a)

might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Allowable Subject Matter

17. Claims 17-19, 35-37, 61-66, and 85-90 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

18. After further consideration of Andonian et al, Andonian et al is found to disclose that the tactile feedback includes a resistive force. Therefore, the subject matter of claim 8 as originally filed is anticipated by Andonian et al.

19. In view of Stout et al, Millsap et al, Kaufmann et al and Demerly et al, of those claims indicated as containing allowable subject matter in the final rejection mailed

March 1, 2005 only claims 17-19, 35-37, 61-66 and 85-90 are still felt to contain allowable subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherman D. Basinger whose telephone number is 571-272-6679. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samuel J. Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sherman D. Basinger
Primary Examiner
Art Unit 3617

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